

Colors and Coloring in China Painting



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INTRODUCTORY

Keramic art is of extreme antiquity, examples having been found in the ruins of Nippur, a city that flourished 6,000 years ago. Most beautiful examples of enamelled pottery have been found in the ruins of the Palace of Ramesis II in Egypt, dating 3,300 years ago. In former times it was next to impossible for a person to obtain the necessary colors, much less the knowledge of using them. The art was practiced by a family and the secrets were handed down through many generations.

Keramic artists have therefore labored under many difficulties, and it is only in recent years that china painting has been robbed of its mysteries, although some of the older teachers even today will tell you that the colors cannot be mixed; that gold colors and iron colors are incompatible; that grounding colors are different from painting colors; that a steel palette knife is injurious to certain colors, and especially to gold; that the colors look entirely different after firing than before firing; that certain colors must be fired at certain temperatures, and others at different temperatures; that tube colors are different from powder colors, and cannot be used together and similar fallacies.

Now, the real truth is, that years ago certain colors were made by one individual, and other colors by another, and as each color maker used different fluxes, each color required a certain firing different from the others, and likewise, as the fluxes were of a different nature, the colors were not entirely successful when mixed.

This however has all been changed. The Royal overglaze colors, for instance, are all prepared from the same base; they can be used for painting, tinting or grounding; they can be mixed, and all of them are fired properly at a moderate temperature, which is equivalent to 700 degrees Centigrade. Little firing tests are provided, whereby one is placed in the kiln, and as soon as it melts down, which is observed through the peep hole, the firing is judged sufficient. So that today, china painting is reduced to an exact Art, and the colors are as easily used as water colors.

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COLORS

MINERAL COLORS derive their name from the fact that only mineral substances enter into their composition, as organic matters would be destroyed by the heat that is used in vitrifying them.

The colors for painting on china consist of lead oxide, borate of soda and white sand, this mixture is melted in a crucible and when cold looks like glass, it is powdered and forms the base from which the colors are made.

By adding a proportion of metallic oxides to the above base, remelting and regrinding, produces colors. For instance three parts of base and one part of red oxide of iron will produce a pompadour red. Oxide of cobalt is used for rich dark blues, cobalt oxide mixed with zinc oxide makes light blues. Greens are produced with oxide of copper and chromium. Yellow with antimony, etc.

The beginner may notice that some colors are advertised as "mineral" colors, while another firm uses the term "vitrifiable" and still another calls them "overglaze." All these terms mean the same, because all colors for china painting are mineral colors, all of them are vitrifiable because they have a property of melting when heated and of forming a glass or enamel, and they are all overglaze because they are painted on china that has been glazed.

But there are also "underglaze" colors, they differ from overglaze colors in the fact that they are not vitrifiable, that is, they will not melt nor form an enamel coating, but must be used on the ware during the process of manufacture, and then afterwards covered with the glaze.

Strictly speaking, all overglaze colors are enamel colors, but there are colors that are called "enamels," they differ from the ordinary colors in having more body, that is to say, they will not melt readily to a clear fluid, but remain thick, so that after firing they will be raised or in relief from the china, therefore the proper term is "relief enamel."

700 degrees test -

ENAMELS are used for heightening the effect on paintings, producing high-lights in relief, also for modeling, jewels and scrolls.

Some relief enamels are very soft, and do not require a very hard firing, others are made to fire at the same temperature of the regular painting colors, while others are made to fire at a high temperature.

Soft white enamel is made for relief work on glass and on wares with a soft glaze such as tile, belleek, etc., it will fire at a temperature of 500 degrees centigrade.

Best white enamel, also known as relief white and sometimes mis-called Aufsetzweiss, is made to fire at the same temperature as painted china.

Aufsetzweiss is a hard white enamel, too hard to be used alone, and is difficult to fire to produce a glaze, it is used for mixing with softer enamels for hardening them. It is practically out of date as white enamel now comes ready prepared and does not need any tempering.

Paste for raised gold is also a relief enamel, it is usually of a golden yellow color so that after the gold is applied, should any of the paste remain uncovered it will not be noticeable.

Colored relief enamels are the same as white enamel excepting that they have been tinted. It is best to purchase colored enamels ready prepared rather than to attempt to tint white enamel, because in mixing white enamel with colors, one is very liable to destroy the viscosity of the enamel and the resulting mixture will blister badly in firing.

MATT COLORS are another class of overglaze colors, they are semi-vitrifiable, and when fired do not show any glaze, but are dull yet having a beautiful sheen and are much admired when used in backgrounds, for handles and similar purposes, sometimes an entire article is decorated in matt colors and the painting is outlined with delicate lines of raised gold. Gold applied over matt colors produces a beautiful bronze effect if stippled on. Matt colors are also called "gouache" or "Worcester" colors.

GLASS COLORS are similar to regular overglaze colors, excepting that the base is softer and they therefore melt more readily. Any of the china colors may be used for painting on glass by mixing with special soft flux which will make them melt at a lower temperature.

Transparency is the main object sought, therefore the most transparent of the china colors should be selected, and sufficient soft flux added to reduce them, as the more that is added the greater will be the transparency, from one-fourth to one-half soft flux should be used.

LUSTRES are still another form of overglaze colors, they come in a liquid form and consist of a soluble organic base that is tinted with various metallic oxides, they are exceedingly rich in Bismuth and when fired have a mirror-like glaze,

Lustres must be used alone, they cannot be mixed with colors, nor is it advisable to attempt using them over colors; always apply lustre direct to the white china. Lustres cannot be used as a glaze for over colors.

GLAZES are overglaze colors that are especially rich in glazing fluxes, and are useful to secure a uniform brilliancy to the painting on china. Some colors if applied thinly will not have sufficient body to glaze in firing, but if dusted over with a glaze it will remedy the defect.

ROYAL GLAZE is a very transparent glaze and may be used over any color. In all cases however, glazes should be applied very thinly, as too much will overdo matters and possibly spoil the painting. Pompadour and other reds of its class which includes blood, carnation, etc., are very fugitive colors and must be treated very lightly with glazes. Any of these colors if glazed too heavily are liable to come out a yellowish or greenish tint about the color and transparency of cheap bottle glass.

Blues, yellows, greens and violets will stand heavy glazing, pinks, greys and rubies also stand considerable, some browns stand good but reddish browns are a trifle fugitive and do not stand glazing well.

IVORY GLAZE These and other colored glazes are the same as
LAVENDER GLAZE royal glaze except that they have been tinted, with the object of adding softness to the painting. Sometimes the regular painting colors are used as glazes, for instance best pink is used for "powdering" over roses. Yellow brown, apple green and other colors are used in backgrounds by powdering, it amounts to the same thing as glazing and at the same time produces a useful tint.

DESCRIPTION OF COLORS

X **IVORY YELLOW** is a pale yellow very useful as a background tint, also for highlights in yellows and browns, and for light yellow shades in painting. It is also used as a glazing color. It is shaded with old ivory.

OLD IVORY is a delicate yellow with a slightly brown tint, it gives a warm light yellow tone in backgrounds, it harmonizes with pale blue, orange, or light greens. It may be shaded with yellow ochre.

LEMON YELLOW is a light yellow of rich lemon tone and is largely used in flowers, fruits and backgrounds. It may be shaded with silver yellow, and for very deep shadows with egg yellow.

MIXING YELLOW These yellows are very similar; mixing yellow
 CANARY YELLOW is a little darker than lemon yellow, but lighter
 SILVER YELLOW than canary, silver yellow is the darkest. They
 are medium yellow shades and are used extensively
 for the yellow coloring in all kinds of china painting. They are
 also used for mixing with greens, browns and reds. They are shaded
 with egg yellow or yellow brown and sometimes with brown green.

ALBERT YELLOW is darker than silver yellow, it is used mostly in
 figure painting but is a good reliable color in
 flower painting and backgrounds; it is shaded with yellow brown and
 for very deep shadows, chestnut brown.

EGG YELLOW is the darkest yellow, it has a very rich and pure
 tone, is a good buttercup color, useful for other dark
 yellow flowers, in backgrounds, etc. Mixed with a little ruby purple
 will form orange. Egg yellow is shaded with yellow brown and some-
 times with grown green.

YELLOW OCHRE These shades are similar, yellow brown being the
 YELLOW BROWN darker and richer tone. They are used for shad-
 ing yellows; for modifying greens and for back-
 grounds. Yellow ochre is used in figure painting for fallow flesh
 tints. It is also a useful highlight in dark browns and black. Both
 harmonize with light blue, light green, orange, reds and browns. They
 are shaded with chestnut brown and for very deep shadows, with dark
 brown.

MEISSEN BROWN Meissen brown is darker than yellow brown,
 CHESTNUT BROWN but not as dark as chestnut brown. They are
 similar in tone and both are light and rich
 browns, very useful in figure painting, also much used in flowers,
 fruits, nuts, foliage and backgrounds. They are shaded with dark
 brown or shading brown. They harmonize with yellows, greens, reds
 and browns.

VIOLET OF IRON is a medium brown with a violet tint, it is used
 in shading reds, also for rose stems, thorns and
 brown touches in foliage, it may be shaded with shading brown.

DEEP RED BROWN is a brown red, and is used for the same pur-
 poses as violet of iron where warm tones are
 preferred, the only difference being that it has a reddish tint.

AUBURN BROWN is a beautiful rich brown a little darker than
 chestnut brown, it is also called hair brown, and
 is largely used in flower painting and backgrounds, also as a glazing
 color. It may be shaded with shading brown.

DARK BROWN These browns are very similar, dark brown
SHADING BROWN is lightest, chocolate is darkest and richest,
CHOCOLATE BROWN being very warm in tone. All of them are
 used in shading lighter browns and they produce rich dark brown backgrounds.

BROWN 4 OR 17, is a very transparent dark brown and gives a beautiful underglaze effect, similar to the juicy richness of Rookwood pottery.

FINISHING BROWN is a black brown used in shading and for giving finishing touches and strengthening paintings for the last firing.

OUTLINING BLACK is a good glossy black useful in outlining and for mixing with other colors to make them darker, also for shading.

BRUNSWICK BLACK is an intense black used in figure painting, also for shading or mixing. Either of the blacks may be lightened with yellow ochre or intensified with ruby or pansy purple.

PEARL GREY is a shading grey for pure white flowers, white drapery and also for very delicate backgrounds.

SILVER GREY is slightly darker than pearl grey and warmer in tone, it is the best grey for painting white roses and other white flowers having a pale greenish tint in the shadows.

WARM GREY is a beautiful soft grey of neutral tone, also known as ashes of roses, it is very useful in flower painting also as a grey background in portrait work.

COPENHAGEN GREY is a beautiful neutral grey with a bluish tone, it is a very valuable background color as it harmonizes with any color, and it is also fine for shadows and undertones in any kind of china painting.

GREY FOR FLOWERS is a beautiful standard flower grey, it is similar to warm grey but darker and a little colder in tone, it is a clear medium shade and may be used in figure work as a light flesh grey.

GREY FOR FLESH is a dark grey which if applied heavily is almost black, it may also be used in flower painting and backgrounds.

GOLD GREY has a reddish grey tone, similar in color to violet of iron, but a little darker and can be used for the same purposes as violet of iron as a shading grey.

LIGHT BLUE which is also called air blue, baby and sky blue, is a beautiful blue shade and works nicely in light backgrounds and is equally useful in painting light blue flowers, delicate blue drapery, etc.

TURQUOISE BLUE is a little darker than light blue and has a beautiful turquoise tint, it is a very desirable color in light backgrounds as it harmonizes with all other light colors, it is a good color for light blue forgetmenots and other light blue flowers. It may be shaded with deep blue green.

SEVRES BLUE is a fine medium blue, very bright in tone, similar to New blue in water colors. It is used in painting bright blue flowers, may be used for shading light blue, and it may be shaded with banding blue.

BANDING BLUE is a dark bright blue and a rich pure shade the same as Yale or Royal blue. This blue is not quite as easy to use as the other blues, it has a tendency to work mushy, therefore, one should use plenty of oil in mixing and lay the color rather heavily.

ROYAL SHADING BLUE is darker than banding blue, it is the same as old blue, Aztec blue and underglaze blue, is very fine for monochrome delft scenes, also in fruit painting, etc.

COPENHAGEN BLUE is the darkest blue, has a grey and almost black tone, it will produce the blue grey tones so admired in the Royal Copenhagen ware. It is very useful in flower and background painting and beautiful in monochrome work. All of the blues will stand heavy glazing, and the darker shades will give rich underglaze effects by applying heavily, it usually takes two paintings and three fires, the last fire for the glazing.

SHELL PINK These are light pinks, and applied thinly are very delicate, they harmonize with light blue, apple green and old ivory when these colors are also applied thinly. They may be shaded with best pink.

BEST PINK is a good all around pink, it does not require any special firing and always comes out a beautiful pink suitable for pink roses and all other pink flowers of similar tone. It may also be used in figure painting for pink flesh tones, and may be mixed with yellow or ochre. These flesh tints will not fire out like mixtures of red and yellow.

ROSE is a color similar to best pink, but a trifle darker it is used largely in backgrounds, but may also be used in flower painting and for the same purposes as best pink.

CRIMSON is a dark pink same as burnt carmine in water colors, it is an American beauty color and very valuable in painting dark pink roses, also as a glazing for over ruby purple and ruby roses, etc.

YELLOW PINK has a slight salmon tint, it is a good flesh tint and will not fire out, it may be mixed with yellow ochre or yellow brown for obtaining fallow or dark flesh tints. It is equally useful in flower and background painting giving a beautiful soft pink effect.

BROWN PINK has a slight brownish tone similar to Meissen brown but pinker and clearer. It is used in shading pinks, also in flower, foliage and background work.

VIOLET OF GOLD is a delicate lavender shade, a beautiful harmonizing color in light backgrounds and much used for representing indistinct flowers, also for painting light tone lilacs, violets, etc. It is a good color for representing distance in a painting.

DEEP VIOLET OF GOLD is a very reddish violet, darker than crimson but not as dark as ruby purple, it harmonizes well with ruby purple, lilac, violet, and pansy purple, also with greens and browns.

ROYAL RUBY PURPLE is a beautiful ruby red used in painting red roses, draperies, backgrounds, etc. It harmonizes with all colors same as deep violet of gold. It fires well and is easy to use.

MAROON is a little darker than ruby purple and is used for the same purposes, it is a stronger color and cannot be applied quite as heavily.

RUBY is darker and stronger than maroon and is used in the deepest red roses, it may be shaded with black for the very deepest shadows. Care should be taken in using this color, not to use too much, as where too thickly applied is liable to fire bronzy or black.

LILAC is a warm violet shade and a beautiful color for violets, lilacs, pansies, sweet peas, etc. It is darker and brighter than violet of gold and suitable for flowers of reddish violet tone.

ROYAL VIOLET is a true rich violet shade for violets, pansies, sweet peas and other violet flowers standing out prominently in a painting. It and also lilac and pansy purple harmonize with ruby reds and blues.

PANSY PURPLE is a beautiful rich royal purple and a splendid pansy color, also for sweet peas and other deep purple flowers.

CORAL ORANGE is a bright orange shade, splendid for brightening backgrounds, also for nasturtiums and other bright orange flowers. It is a fugitive color and liable to fire badly especially if glazed or mixed with other colors.

NASTURTIIUM RED is a light red, slightly orange in tone, very useful in flower painting and backgrounds. It harmonizes with yellows, browns and greens, and is shaded with yellow red or blood red.

CARNATION YELLOW RED These two are very similar, both are a little darker than nasturtium red, but lighter than blood red. Useful for same purposes as nasturtium, where a little darker tint is required.

BLOOD RED is a good bright dark red, very much used in flower painting, for bright touches, and in backgrounds. It is a deep red nasturtium shade and may be shaded with deep red brown.

POMPADOUR RED is a dark rich red, darker than blood red, and when applied very thinly produces a fine pink. It is used for pink tints in flesh painting, also for the same purposes as blood red.

WATER GREEN is a pale green with bluish tint, it is used in delicate backgrounds also for representing water in scenery, fish painting, etc.

COALPORT GREEN is a beautiful light green, warmer in tone than apple green and excellent as a background color, either alone or in combination with harmonizing colors, of which may be mentioned yellows, browns, reds and greens.

APPLE GREEN is a splendid light green of cool tone and is used in backgrounds, harmonizing with light blue, pinks, or yellow browns. It is used in flowers, fruits, foliage, and also figure painting.

YELLOW GREEN The two shades are similar, moss green is slightly darker and warmer in tone, they are largely used in foliage and backgrounds. They are shaded with olive green.

GRASS GREEN is a medium green, cool in tone. It is a shading for apple green and is used in foliage, etc.

OLIVE GREEN is about the same as grass green excepting that it has a warm tone, it harmonizes with brown green, browns and dark greens and is largely used in foliage.

BROWN GREEN is much used in foliage for the brownish tones in dried leaves, also as a shading color for other greens, it combines with browns or greens and is a very useful color.

DEEP BLUE GREEN is a fine blue shade, darker than turquoise blue but similar in tone, a better name would be deep turquoise blue.

RUSSIAN GREEN is the same as deep chrome green, it is the brightest green and is a pure clear shade, darker than grass green but not as dark as Royal dark green, all three are similar shades but differing in depth. These greens may be used in combination with blues, violets, purple, browns or black,

TURQUOISE GREEN is a beautiful bright green, with a blue tint; a true blue green shade, very valuable in backgrounds, useful in foliage, also in draperies. It can be shaded with night green.

ROYAL DARK GREEN is a good strong green, very rich and desirable; useful in monochrome work, also for deep green backgrounds, the dark shades in foliage, etc.

DELFT GREEN is a little darker than dark green and used for similar purposes.

DUCK GREEN is similar to delft green, but a trifle darker.

NIGHT GREEN is a very deep green with a bluish cast, is a fine color for shading other greens and for rich deep backgrounds.

ROYAL SHADING GREEN is a very deep and rich green, pure clear tone, darker than night green or duck green. Very rich, used as a shading with other dark greens in backgrounds, for handles, bases of large articles, etc.

DARK GREEN NO. 7 is also called black green, it is the darkest green and is free from a bluish tone.

COLORING SUGGESTIONS

The following suggestions are of advantage in painting any subject. A flat tint is simply a plain color without variation. Flat tints are used in conventional work. An object having form or solidity cannot be shown with a flat tint. It is necessary to use a variation in the tint, usually by means of greys.

In order to paint a white object one must use greys, or to paint a black object, greys again must be used, and the rule holds with any color.

For instance, take a plain white card, cut off a corner and lay the corner on the card, place the card before you and with the light from the back, then try to represent the piece of card in a painting. You will observe that one edge is apparently whiter than the card, while the other two edges are darker. Now if you paint the card a pure white, how are you going to get that one edge whiter than the rest of the card? The truth is, that the card is represented to our eyes as a grey, and the white edge is due to reflected light, termed in painting, a "highlight," and it appears whiter than it really is, while the other two edges cast a shadow and appear darker than they really are. Therefore a white object must be shown by the use of greys. One can take any color of card and try the same experiment and it will work out just the same, showing that grey or a variation in color is necessary to depict form.

The color of the reflected light from any colored surface will be influenced by the juxtaposition of differently colored objects. It will consist of a mixture of whatever color of light falls upon the object, with the color of the object. In any case the reflected light is much lighter and brighter than the rest of the object.

For instance, a red apple hanging under green leaves, will have a greenish light (reflected from the leaves) falling upon it, and it will reflect a grey tone, because red and green produce grey. But if the same apple is out in the open and simply white light falls upon it, it will reflect a pink tone, because white and red make pink. But if we place a yellow background beside the apple so that a yellowish light will fall on it and be reflected, then it will reflect an orange tone.

It is customary to imagine a light falling on a painting from some one source, usually it is from the upper left hand corner.

It is one of the first things to consider in a painting, and after you have determined the position of your light, then paint all your high lights and shadows with reference to the source of illumination. In nature all shadows are cast in the same direction and all highlights are produced from the same source, therefore do not make the mistake of putting highlights and shadows in opposition to one another.

Oftentimes a little reflected light is shown from the shadow side of an object produced by a highlight reflecting into a shadow. As an example, imagine an apple hanging so that the light falls upon it from above, and underneath the apple is a bunch of leaves also receiving the same light, now the light falling on the leaves may be diverted upwards and reflect on the underside of the apple, giving a reflected light in its shadow, such a reflected light is usually shown by a very narrow light line, it will make the object stand out and give it solidity.

While highlights and reflected lights are somewhat similar, it is customary with artists to distinguish the terms, thus a highlight is a reflection from the object of the principal light that falls upon it. And a reflected light is one that first falls upon some portion of an object and from there is reflected to some other portion, and is therefrom reflected the second time.

These second reflections are nearly always present and every painting should take them into account. Unless the reflected lights are shown in paintings, they will be devoid of sufficient perspective and are likely to look like patterns cut out and pasted on.

It is likewise important to have shadows in a painting and in their proper positions as they also give perspective or solidity to an object. The shadows are usually a grey such as a mixture of black and white produces, but shadows are also influenced by the color of any colored light that is reflected into the space they occupy. To illustrate this clearly, set a tall opaque article (a vase will do) on a sheet of white paper, and place it near a window so that it will cast a good shadow. Now get a sheet of orange colored paper and one of black, or their equivalent, then place the colored paper at an angle so as to illuminate the shadow of the vase, the black paper will not effect the shadow much but while holding the black paper, pass the orange paper in front of the black paper and you will then plainly see the orange tint reflected into the shadow.

EXAMPLES OF REFLECTIONS AND SHADOWS

WHITE, for the local tone give a thin wash of pearl grey or silver grey, the half tones are the same greys a trifle heavier, and the deepest shadows are warm grey. The highlight is shown by the white of the china, but if a more prominent effect is wanted, then a little white enamel is used. But if the painting is influenced by some colored light falling upon it such as green from adjacent leaves or foliage, then a slight tint of that color should be represented wherever it falls upon the subject. As a rule such color reflections are represented by slight touches of color, rather than by washes.

YELLOW, the local tone may be any yellow most suitable for the subject. The half tones will be warm grey or grey for flowers, the shadows, yellow ochre or yellow brown or a darker brown, depending upon the amount of depth required. The highlights would be a thin wash of ivory yellow.

PINK, the local tone is any suitable pink, the half tones are warm grey and the shadows, crimson; and may be deepened with deep violet of gold or ruby purple. The highlights are white or light pink.

RED, the local tone will be either light or dark red, the half tones either Copenhagen grey or grey for flowers and the shadows, grey for flesh or gold grey. The highlights will be pink or slightly orange in tone depending upon the tone of the red used.

BLUE, the local tone will be any suitable blue, the half tones will be Copenhagen grey for light blues and grey for flesh for dark blues, the shadows a darker blue for light blues, and black for dark blues. The highlights will be pearl grey or a light blue.

BLACK, the local tone will be black modified by the addition of yellow ochre for warm tones and blue for cold tones. The deep shadows will be ruby which will intensify black. The highlights are usually represented with yellow ochre, but a grey, such as grey for flowers or even Copenhagen grey is often used.

SHADOW UNDERTONES

Some of the best workers map out their painting in monochrome for the first firing, using a grey such as Copenhagen grey or grey for flesh. The highlights are left very clear and prominent and the shadows are worked in similar to a photograph in effect, but all the fine detail is left out, the point being to get all the principal lights and shadows of the painting in the first firing, then the second firing consists in coloring the monochrome, the undertones form the necessary shadows. This method results in clearness and freshness of coloring not easily obtained when shadows are mixed in with the colors in the usual way.

The above method comes the nearest to shadows of nature. In nature the shadow is very transparent, and any color placed in a shadow shows the color very distinctly, but in china painting if we attempt to place a regular shadow color over other colors, it would completely hide them, thus grey for flesh is a fair example of the natural shadow color cast in nature, but if we cover a yellow for instance, the strength of the grey will absorb the yellow completely, therefore we have recourse to shading the yellow with a darker yellow instead of with a grey. If we had a perfectly transparent grey, then it would be preferable.

Unless one is experienced, it is best to paint too light, rather than too dark, because it is easy to strengthen a color, but very difficult to lighten a color. The only way to apparently lighten a color is to place a darker color beside it, black beside a color will produce the greatest weakening, while grey will sometimes brighten a dull color if placed beside it.

Sometimes it suffices to wash over a color with a contrasting color which will lower its tone and produce a grey effect.

But in case where a color is dull or weak, it is best to wash over it with some of the same color in order to brighten it. White placed besides a color apparently brightens and strengthens the color.

One color may be readily changed into another by washing one color over another, some of the most beautiful shades are produced in this manner, however all china colors cannot be used in this manner, and it is always advisable to make little trials beforehand before attempting anything radical.

Shadows are usually painted a little darker than they are to be after fired as they often lose some in firing.

CONTRAST AND HARMONY

The greatest contrast is black and white. In colors, red contrasts with green, yellow with violet and blue with orange. But light red and dark green will offer greater contrast than light red and light green. The same holds good with all colors.

There are but three primary colors and these are most nearly represented in china paints by mixing yellow, Sevres blue and ruby purple. But there is no red in china colors equal the spectrum red, the rubies are too purplish and the carnation and other reds are entirely too orange in tone. Mixing a ruby and carnation red, results in a brown. But sometimes it is possible to get a fine effect by painting a ruby red first and firing, then tinting over it with pompadour red and firing lightly.

A few contrasting colors are pink and apple green, light blue and coral orange, shading blue and nasturtium red, violet and egg yellow, lilac and lemon yellow, coalport green and pansy purple.

WHITE contrasts with dark colors and harmonizes with light colors.

YELLOW contrasts with dark colors, the greatest contrast being with dark greens, violets and blues. It harmonizes with light colors, especially those containing yellow or red.

REDS contrast with colors containing blue, green or black and harmonize with colors containing white, yellow or red.

BLUES contrast with warm colors containing yellows or reds, and harmonize with colors containing blue or black.

VIOLET and purple contrasts with yellows, greens and white, and harmonize with reds and reddish blues.

ORANGE contrasts with dark colors containing blue and harmonizes with yellows, browns and reds.

GREEN contrasts with colors containing red and harmonizes with colors containing yellow or blue. Bluish greens are cold and yellowish greens are warm greens.

GOLD contrasts with dark colors and harmonizes with light colors. The best harmony is white, the least is yellow.

In naturalistic flower painting, a background that harmonizes with the principal subject in the painting, is most suitable.

But, if it is desirable to have the subject stand out prominently, then the background should offer more or less contrast. It should be either lighter or darker than the subject and contain complimentary colors.

COLORING FOR BACKGROUNDS

WHITE, the principal subject, such as white flowers, etc.

The flowers being white are usually shown by pale greys; ivory yellow and old ivory make a good harmonizing background into which may be blended a little light blue, some coalport green, and to represent a distance, a little violet of gold, giving a pale lavender shade. In the lower part of the painting if there is any foliage, which will probably be represented with yellowish greens shaded with a little brown green or browns, so that a harmonizing background for these darker tones will be greens and browns worked in more or less indistinctly.

White also looks well with a background consisting of a more or less plain grey such as Copenhagen grey, or it may be used as a foundation mixed with a little gold grey to darken it, which will give a brownish grey, and a strongly contrasting effect with the white object; white chrysanthemums under these conditions show off with splendid effect. Other white flowers would also be made to stand out prominently with the same treatment.

YELLOW the principal subject.

Backgrounds for light yellows, will be very similar to those used for white subjects. For darker subjects, such as egg yellow and shades approaching orange, we would suggest a background consisting principally of Copenhagen grey which could be fired in a plain flat tint, a rather thin wash so as to give a delicate bluish grey. This background alone, will make the yellows stand out rather strongly, therefore it should be softened where it adjoins the subject by washing in or powdering with a very little pink, which will change the grey to a pinkish cast. To obtain a cloudy effect use more or less pink in portions of the background and alternate or mix in with some light blue, thus obtaining, bluish, violet and pinkish tones over the light Copenhagen, which should show through here and there. The pinkish tones can be blended into a darker tone with brown pink and a little lilac over the brown pink will still deepen the tone. Adjoining these dark pinkish greys a little cool grey, such as pearl grey worked over the Copenhagen undertone, will prove very effective in adding life to the background.

In certain subjects of yellow where considerable green foliage is in evidence, it is well to use a little dark blue applied thinly so as to give a dark greyish blue tone rather than a pure dark blue; this can be shaded into moss green, thence into brown green and darkened with gold grey. Violet of gold, worked into backgrounds containing considerable yellow and yellowish green foliage, is effective by introducing the complimentary color and adds greatly to the general color combination. A little touch of yellow in the background is often effective if applied as a reflection from some portion of the yellow subject.

PINK the principal subject.

The flowers or subject will usually be pink in light and dark shades, with highlights almost if not quite white, the best harmonizing color is probably ivory yellow or old ivory, which may be blended into yellow brown and into yellow green. The foliage will contain greens, usually very yellow in tone and shaded with moss green and a little brown green, a little egg yellow worked in here and there and tempered with yellow brown. The lighter tones in the background, usually at the upper portion may be pale lilac made by blending a little violet of gold into the ivory tints and some indistinct foliage or flowers may be worked into the same, being shown by greys partaking of the same color as the surroundings. In the darker portion of the background, yellow brown may be shaded into gold grey and a little brown green to modify the tones, the heavier portions of the foliage being thus enveloped, or the foliage may be partially hidden in a distinctly greenish background.

To have the pink subject prominent it should be surrounded by dark or contrasting colors, thus a pink rose will stand out from a dark bluish green foliage, this should be gradually blended into a deep blue green and finally into a light blue for a contrasting yet harmonizing effect. Or the deep bluish green may be blended into yellow brown which in turn may be powdered with crimson giving a ruddy glow. The yellow brown can be blended into apple green and from that into light blue, thus you get two scales of colors starting from dark bluish green into light blue.

A plain background for pink, is one that consists largely of ivory shades or silver grey modified with a little pearl grey or Copenhagen grey. These greys can be shaded into apple green, thence into brown pink and then into brown green and browns, or the greys may be blended into moss green, brown green and thence into darker greens.

RED the principal subject.

A good harmonizing background for reds such as carnation, blood red, pompadour, etc., will be as follows: The lightest tones will be lemon yellow (a thin wash) which is blended into mixing yellow, egg yellow, yellow brown, violet of iron, dark brown, or it may start with a thin wash of lemon yellow blended into mixing yellow, and yellow brown, finally powdered with a little apple green over the yellows giving grey tones which can run into greens if green foliage is shown.

Contrasting backgrounds for red objects may be light or dark, an example of light background is a wash of lemon yellow slightly modified in places with a deeper wash or with a little silver grey or warm grey worked in.

A dark contrasting background is one consisting of green, starting with coalport green which can be shaded into apple green or yel-

low green, thence into darker greens, powdering some portions of a green background with Copenhagen grey will change the tone and relieve the effect of too much green, or the greens can be worked into Copenhagen grey and thence into a pale greyish blue. Greyish blues can be blended into brown green, and thence into browns.

BLUE OR VIOLET the principal subject.

The principal subject is painted with turquoise blue, lilac, royal violet or pansy purple. An example of a harmonizing background is to start in the lightest portion with a thin wash of Copenhagen grey, shading into light blue, thence into darker blue or violet tones similar to the principal colors used in the subject. Portions of this bluish background may be clouded by powdering pink over it which will give a beautiful warm tone. Or one can start as before with thin wash of Copenhagen grey graduating to a slightly darker tone, then blending in a little lemon yellow allowing a very little of the lemon to show almost pure, from thence into a very little yellow brown upon which a thin dusting of deep violet of gold is given which will also blend into some of the principal subject.

If the principal subject has considerable highlights and comparatively light in tone, a plain ivory background with a little lemon yellow worked in, which may be shaded with a very little carnation giving an orange tone; which may be placed in juxtaposition with a portion of the painting thus bringing it out strongly by contrast. A little orange color would add greatly to the life of the painting without being considered contrasty. But a background consisting largely or entirely of yellows, light and dark modified by powdering with yellow brown and carnation would bring out the subject very prominently, such a background could be darkened with gold grey and brown green where necessary to blend with foliage. In any of the backgrounds for a violet or blue subject the use of violet of gold powdered over ivory or thin Copenhagen will give a fine soft effect to represent distance and will also act as a blending medium to work into almost any other color. Deep rich backgrounds can be made by blending violet and pansy purple into the violet of gold above mentioned, and these in turn can be still further deepened by shading blue or black. From shading blue it is easy to blend into greens.

GREEN the principal subject.

It is customary to paint greens with considerable latitude, especially in flower painting, and as a rule they are secondary to the principal subject, but there are cases where green is the subject, for instance hops; the high lights in the painting will be silver grey and pearl grey, the half tones, moss green shaded with a little brown green and the deeper shadows dark green and shading green, the leaves will be similar in tone with perhaps a little yellow green in the highlights. A light background will be ivory yellow shading into

pearl grey, thence into deep blue green, thence into Russian green blending with the subject. For warmer tone a little yellow brown or chestnut brown can be worked in, preferably over greens so as to give warm greyish greens. A very little orange used somewhere in the background or a few reddish tones will add effectiveness.

A darker background can consist of Copenhagen grey applied moderately heavy so as to give a solid color, intermingled with it may be violet of gold for warm tones, turquoise blue for blue tones, a little touch of pink, and blending into the blue tones may be used a little coalport green, thence moss green, thence into the subject. Shading green and brown green can be used in the deeper portions of the background and subject.

In some cases greys go well with green, thus green foliage may be shown with a strong light falling on it, the highlights being almost as neutral as warm grey, in fact that could be used and grey for flowers tinted with moss green could be used for the accentuations, the background would be a mixture of silver grey and warm grey, while it and the foliage could gradually work into turquoise green, thence into Russian (deep chrome) green, which may be darkened with a little brown green. The subject and background can be powdered with silver grey to unite the greens and greys harmoniously.

Distinctly warm tones may be also worked into backgrounds with green subjects especially if the subject is a warm green, the tint would run from coalport green into yellow green, thence into yellow brown, thence into brown green and finally into gold grey or dark brown, a little blood red in touches will add effectiveness, when applied in the browns.

A FEW TREATMENTS

WHITE ROSES. A light wash of silver grey is used for the half tones in the petals, washing out and leaving the white china for the highlights. Silver grey applied heavily is used for the shadows. The centers are lemon yellow retouched with egg yellow and a slight touch of gold grey.

YELLOW ROSES. The local tone is lemon yellow which may be graduated to a thin wash for the highlights. The darker portions may be retouched with egg yellow, yellow brown and a little nasturtium red in the deepest shadows. A slight touch of brown green is used for the centers.

PINK ROSES. The local tone is best pink applied thinly, for the darker portions use crimson and for the shadows Copenhagen grey. Dark pink roses have a local tone of crimson applied thinly and the darker portions are retouched with ruby purple and Copenhagen grey. To obtain a soft indistinct effect, allow the painting to dry, and before firing powder with best pink or rose.

RED ROSES Use ruby purple for the local tone, the darker portions are to be retouched with ruby. For the deepest shadows use a very little black. Pansy purple is useful for the centers. Before the last firing, dry thoroughly and powder very slightly, with pompadour red.

ROSE LEAVES. Apple green, moss green and royal dark green are used for the local tones, for retouching and strengthening use Russian green, brown green and dark green No. 7. Brown green is useful for stems and it should be partially overlaid with violet of iron. Warm tones in the leaves are produced with yellow brown and deep red brown, also violet of iron.

BACKGROUNDS (FOR ROSES). Copenhagen grey is very useful as a foundation color, pale lilac tones are obtained with violet of gold, yellowish tones with lemon yellow or ivory yellow, warmer yellowish tones with old ivory or yellow brown. Pale green tones are obtained with coalport green, darker tones with apple green, bluer tones with water green. Turquoise blue or light blue for blue, nasturtium red for light red, rose for pink, blood red for darker red, moss green, Russian green and royal dark green for darker greens.

POPPIES. Red poppies are painted with nasturtium red for the local tone, which should be shaded with blood red for the darker tones and violet for the deepest shadows. The centers are painted with brown green, violet and touches of black over violet.

White poppies are made with a thin wash of silver grey, for the darker shadows use either lemon yellow, Copenhagen grey, or silver grey darkened with grey for flowers. The centers are the same as for red poppies.

Pink poppies have best pink for the local tone, they are retouched with crimson, ruby purple and in the deepest portions, pansy purple. When yellow is in the background, a touch of lemon yellow in adjacent highlights is very effective.

Poppy leaves are executed with yellow green, dark green, brown green and dark green No. 7, and violet for the shadows. For a background, Copenhagen grey, egg yellow, dark green, violet, yellow green, ivory yellow and pearl grey will make a beautiful combination.

CHRYSANTHEMUMS White blossoms are painted the same as white roses, but using Copenhagen grey in the deepest shadows. Pink blossoms are painted with best pink or rose, shaded with crimson, and a touch of egg yellow for the center. For violet blossoms the local tone is violet of gold shaded with lilac and royal violet and in the deepest shadows, pansy purple. The centers are egg yellow and a touch of nasturtium red.

The leaves are moss green and grass green, shaded with dark green and brown green and touches of violet of iron.

For the background, Copenhagen grey, egg yellow, coalport green, pearl grey; a little nasturtium red powdered over the yellow will give a fine orange tint and a slight powdering of pink over the Copenhagen and pearl grey will give pinkish greys. Powdering with best pink over the pink blossoms and violet of gold over the violet flowers will add softness and they may be thus blended into the background.

VIOLETS (single or double). The local tone for light violets is lilac and for dark violets, violet. Pansy purple may be used for the deepest shadows and centers, a touch of egg yellow and pompadour red is also used in the centers.

The leaves are grass green, brown green and dark green No. 7. In the background, use coalport green, egg yellow, and a little ruby purple, and a little nasturtium red over the yellows will add warmth.

SWEET PEAS. The pink blossoms are painted with best pink, washing out and leaving the white china for the highlights, the deepest shadows are crimson. Yellow blossoms are painted with ivory yellow, the darker portions being canary yellow and touches of yellow red for the deepest shadows. Violet blossoms are painted with lilac and shaded with royal violet. Deep red blossoms are painted with maroon and shaded with a little pansy purple.

Deep purple blossoms consist of pansy purple shaded with black. The coloring of the leaves and the background is about the same as for violets.

CARNATIONS. White, pink and red carnations are painted with the same colors as used for roses.

CLOVER. Pink clover is painted with a wash of crimson, the markings are ruby purple and the shadows ruby purple and a little gold grey. Distant clover is made with Copenhagen grey and pink. White clover is painted with pearl grey and strengthened with silver grey. In the last firing touches of white enamel may be used for the highlights. For the light colored leaves use yellow green retouched with grass green and touches of brown green, darker leaves are made with olive green shaded with royal dark green and a little brown green; for indistinctness, some of the leaves may be powdered with apple green.

LILACS. The colorings in lilacs also leaves and background are the same as for violets.

FORGETMENOTS. For the light blossoms use light blue, for those of medium tone use turquoise blue and the darker ones use Sevres blue, the centers are touches of egg yellow and carnation. The treatment of leaves and background is the same as for violets.

GERANIUMS. For the first firing, lay in the brighter blossoms with best pink and the darker ones with brown pink, wiping out the highlights where necessary. In the second firing the half tones and shadows are made with carnation, blood red and pompadour red.

The leaves are painted with yellow green, grass green, olive green and brown green, the reddish tints in the leaves are produced by blending in crimson, violet of gold, auburn brown and a little finishing brown in the darkest portions.

To obtain softness in the flowers they may be powdered with carnation, using it very sparingly, the darker flowers may be powdered with brown pink. In a warm toned background, the leaves can be powdered with brown pink and pompadour red in order to blend into the background, which may consist of lemon yellow, shaded into egg yellow, yellow brown, auburn brown and dark brown, a little apple green blended into the yellows will add atmosphere,

DAISIES. Paint the white blossoms with pearl grey, wiping out and leaving the china for the highlights, for the deepest shadows use a very little Copenhagen grey. The centers are egg yellow, yellow brown and a little chocolate brown. For yellow daisies use silver yellow, which may be strengthened with egg yellow and yellow brown and for the centers use deep red brown and chocolate brown. The leaves are similar to poppy.

BUTTERCUPS Are painted with egg yellow, the shadows yellow brown and a little nasturtium red. Leaves same as poppy.

TRUMPET FLOWERS. The local tone is nasturtium red, the shadows are carnation, blood red and the deepest shadows a little deep red brown. A little egg yellow may be worked into the highlights. The treatment for leaves is same as for rose leaves excepting that the stems are not overlaid with violet of iron.

FIRE BUSH. The blossoms have the same treatment as geraniums and the leaves are the same as for roses.

CRAB APPLE BLOSSOMS. The blossoms are painted with shell pink, wiping out for the highlights and shading with Copenhagen grey, the centers are moss green and touches of egg yellow and carnation, the distant flowers are shell pink mixed with a little Copenhagen grey and greater indistinctness can be produced by powdering with shell pink or brown pink. The leaves are the same treatment as rose leaves.

EASTER LILY. The white china should be left for the highlights and a very little pearl grey worked in for the lighter portions and shading into silver grey, the darkest shadows are brown pink worked into the silver grey, the centers are grass green, egg yellow, nasturtium red, and the shading is dark brown. The leaves and stems are grass green, dark green and dark green No. 7, and the deepest shadows pansy purple over the greens, powdering with pansy purple will give depth to the green portions.

PEACH BLOSSOMS. The local tone is best pink and yellow pink and the darker portions crimson, the shadows are a little ruby purple and the deepest tones for distance in the blossoms, is pansy purple shaded into lilac. The centers are yellow green with touches of auburn brown. The leaves are water green, apple green, moss green and a little turquoise green for the portions with a bluish tinge.

ANEMONE. The white blossoms are painted with pearl and Copenhagen greys, the centers are egg yellow with touches of moss green and deep red brown. The pink blossoms are painted with rose and shaded with ruby purple, centers same as for the white blossoms. The red blossoms are painted with ruby purple for the first firing, and in the second firing retouched with pompadour red, a thin wash in the lighter portions and applied heavier for the shadows. Being careful not to overfire after painting with the pompadour, this combination will produce the finest cardinal to be obtained.

The leaves are painted with yellow green and moss green, a little brown green and dark green No. 7 being used for shadows and shading.

GOLD FISH. The local tone for the fish is egg yellow, the darker tones are yellow brown which is wiped out for the scales, the golden tone is produced by retouching with carnation and touches of blood red, the deepest shadows are pompadour red. Water is produced by washes of pearl grey and water green.

BIRDS. The swallowtail kite is painted with pearl grey for the white feathers, wiping out all excepting the slight edges of the feathers. The wing and tail feathers are painted with grey for flesh for the first firing, the brownish tones are auburn brown and night green, and the shading is night green and violet. The beak is violet of gold and brown pink, the eyes brown pink, the pupil grey for flesh darkened with a little violet.

BLUE MOUNTAIN LORY. The head feathers are violet of gold shaded with royal violet, the eye is yellow pink darkened with a very little carnation; pupil is grey for flesh. For the beak, use egg yellow shaded with yellow brown and auburn brown. Back of neck and other green feathers use grass green lightened with canary yellow for the light spots and shaded with royal dark green. In the deepest shadows use a little royal violet. The breast is coral orange for the first fire and is retouched with blood red. The inside of wing is painted with egg yellow, yellow brown, pompadour red very thin for the light red, and blood red shaded with pompadour red for the darker reds. The grey tones in the feathers are made with grey for flesh tinged with grass green.

VERMILION FLY CATCHER. The breast and head are painted with crimson for the first fire, in the second fire retouch with carnation. The brown feathers are grey for flesh for the foundation and retouched with shading brown.

MANDARIN DUCK. The green feathers are turquoise green shaded with night green. The white breast is painted with pearl grey. The foundation for the brownish feathers is grey for flesh and retouched with finishing brown to which a very little night green is added. The foundation for the neck is brown pink, it is retouched with egg yellow for the highlights and with a wash of ruby purple for the local tone. The shading is gold grey. The beak is ruby purple for the first fire, blood red for the second fire.

RED CROSS BILLS. The local tone is yellow brown, the shadows grey for flesh and finishing brown. The crimson tones are produced with crimson for the first fire, carnation for the second firing.

BUTTERFLIES. (Achilles.) The coloring is usually very gorgeous and much latitude is allowable, the achilles is painted with lemon yellow, chestnut brown and shaded with dark brown and a little royal violet. The blue wings are sevrès blue shaded with banding blue and the deepest shadows are royal violet and black.

OWL BUTTERFLY is painted with yellow brown and old ivory mixed with grey for flowers for the lighter portions, the shading is chestnut brown, shading brown and royal violet.

The colorings for the *batwings* are very variable, one is painted with carnation, meissen brown and royal violet darkened with black, another with ivory yellow darkened with coalport green, a little gold grey and the dark portions violet and black. A third is painted with apple green darkened with deep blue green and the dark portions violet, pansy purple and black. The fourth coloring is brown pink darkened with gold grey and touches of shading brown, the panel is water green, the dark wing is pansy purple. The *violet Euploea* has the same treatment as Achilles with the addition of a little turquoise green in the stripes. The *Javanese* butterfly is painted with egg yellow, gold grey and shading brown.

ELK The foundation color is brown pink which is darkened with gold grey, the deepest shadows are finishing brown, a little albert yellow is worked into the antlers and shaded with gold grey and violet.

BLACKBERRIES are painted with shading blue and pansy purple, the highest lights are violet of gold. Unripe berries are painted with ruby purple, distant berries are lilac, royal violet and ruby purple. The white blossoms are painted with pearl grey, the highlights being wiped out. The centers are brown pink

and touches of auburn brown. The leaves are ivory yellow, yellow green, olive green and brown green, the shading is dark green and a little finishing brown. The background contains turquoise blue, Copenhagen grey, egg yellow, best pink and a little pompadour red applied thinly.

CURRENTS are laid in with ruby purple for the first firing, being careful to wipe out for the light tones. In the second fire retouch with yellow red and pompadour red and touches of chestnut brown for the centers. The leaves are yellow green, turquoise green, olive green and shaded with brown green and shading green.

GRAPES. Dark grapes should be painted with pansy purple, red grapes with royal ruby purple and crimson, the lighter tones with yellow pink and yellow brown. The leaves and background require moss green, olive green, Russian green, Copenhagen blue, egg yellow, apple green, brown green and crimson. Retouch dark grapes with royal violet and pansy purple, red grapes with crimson, ruby purple and a little pansy, the deepest shadows are finishing brown. The leaves and background are to be retouched with the same colors used at first and strengthen the shadows with finishing brown, and royal violet.

WILD GRAPES are painted with mixing yellow, yellow green, royal violet and pansy purple, the grapes may be laid in with Copenhagen grey in monochrome for the first fire, giving attention to light and shadow, then in the second and third fires apply the colors and strengthen. The leaves are painted with olive green, brown green, Russian and shading greens, a little chestnut brown and blood red may sometimes be worked in the foliage with advantage.

STRAWBERRIES. The colors used are yellow red and pompadour and the seeds are made with touches of chestnut brown, unripe berries are painted with mixing yellow and yellow green shaded into pompadour red. Berries in the background and shown indistinctly may be painted with Copenhagen grey and tinted with yellow and a little pompadour red. The leaves are painted with olive green, brown green, dark green, meissen brown and touches of pompadour red. One can use a background of brown tones such as egg yellow shaded into chestnut brown and darkened with deep red brown in the darkest tones.

CHERRIES. The colors for red cherries are lemon yellow, yellow red and blood red, for dark cherries blood red, maroon and a little pansy purple for the deepest tones. For unripe cherries use yellow green and shade it into yellow red. The stems are apple green shaded with violet of iron, the woody stems are brown green, dark brown and a little Copenhagen grey for the highlights.

GOOSEBERRIES are painted with mixing yellow, moss green, olive green and meissen brown in the first painting represent the simple colors and the light and shade, the berries are made with thin washes of color, so that they will have a transparent effect, in the second firing add the detail such as ribbing the berries and putting on the tiny spines. Indistinct leaves and berries are painted with warm grey, yellow green and a little violet of iron.

CRABAPPLES are painted with lemon yellow, yellow brown, carnation, the centers near the stem are deepened with shading brown, the stems are moss green shaded with shading brown, the woody stems are brown 4 or 17 shaded with shading brown and a little Copenhagen grey for high lights. The leaves are moss green, brown green and a little turquoise green applied thinly for highlights. The deeper tones are dark green and shaded with gold grey.

GENERAL SUGGESTIONS

Relief enamels when possible should be reserved for the last firing as repeated firing may cause them to scale.

Pinks when underfired are yellowish, ruby is brownish in tone. If over fired, pinks and rubies take on a violet tone.

Colors that are badly underfired, look dirty, have no glaze, and may rub off.

China that has been used, may not be decorated and fired successfully, because it is liable to fire with spots under the glaze, sometimes utterly ruining the piece.

The proportion of painting oil to powder colors is about equal parts, it should be a soft cream, thin enough to flow easily from the brush, yet thick enough not to spread out rapidly when heaped on the palette.

Oil of cloves is a very slow drying oil and is used to keep colors on the palette from drying out quickly, a little added to the painting medium will make it dry very slowly. China that has been painted with clove oil, must be thoroughly oven dried before sending to be fired, as otherwise the colors are liable to run in firing and thus ruin the piece.

Some painting medium when mixed with the colors and applied to the china will dry out glossy, such mediums will gather dust very readily and moreover have a fault of causing the painting to blister in firing, oils that have such characters are called fat oils.

A useful dropper for oils is to place a toothpick in the cork of the oil bottle, on removing the cork the toothpick will carry sufficient oil with it, so that it will drop off and it is thus easy to get a small and exact quantity of oil.

In brushes, experienced china painters invariably advise the use of large ones, because one can do the work quicker and easier, as soon as you get accustomed to them. Small brushes require you to work in a mincing manner, while with large ones you can get a broad even tint and yet by pointing the brush can obtain the finer touches and the amount of paint held in the brush enables you to work considerable detail without recharging it.

In using brushes many advise the use of comparatively long handles and while working with them to hold them as far away from the point as possible, the object is that all cramped effect is done away with and you secure freedom and ease in working, all of which adds speed and character to your work.

A brush if properly cared for will last a long time, and it is advisable to buy the very best. They cost but a trifle more than the cheap brushes which have for their redeeming feature simply a discount or lower price, any but the very best are imitation camels hair, they lack elasticity and spread out very poorly as the quills are seldom well filled. In brushes there are none that are too good and no brush is perfect, but the genuine imported French camels hair are the best.

FIRING. In the matter of kilns there are seldom any advantages in an expensive kiln over a cheaper one, for instance, a \$15 charcoal kiln will do just as good work as a \$125 oil kiln. It may not hold as much china, but in getting right down to results, one is just as good as the other, and the charcoal kiln will outwear an oil kiln two to one. It has a decided advantage in not producing an immense amount of soot, and has no element of danger regarding oil explosion. Nevertheless the oil kilns are very good and do excellent work and are all right for those who have the money to invest in them.

Before firing any china it is well to see that it is dry and free from dust, any particles can be removed with a dust needle. When any oil of cloves or other slow drying oils have been used in painting, it is advisable to dry the china in an oven before firing; should a brown discoloration develop in drying, it will disappear in firing.

Often the back of the china is full of finger marks which will fire in, if not cleaned before firing, all ink and color marks should be washed off leaving the china perfectly clean.

When paintings have been packed with cotton before firing, simply remove all the cotton possible by gently rubbing it off, the little lint that sticks to the surface will burn away and not show.

Firing pots should be well brushed after each firing to remove loosened scales, a small stiff scrub brush is best. The dust may be wiped out with an oily rag dampened with coal oil which also will prevent rust and not interfere with the next firing. Do not wet the inside of your kiln with water as dampness is very detrimental to the production of a glaze.

Sometimes china will break in firing, this may be caused by heating the kiln too rapidly, or by cooling too fast, over-crowding the kiln is also a cause. Sometimes belleek and other wares having a soft glaze will "craze" in firing, this is the production of minute cracks over the china and is caused by too rapid heating or cooling. Also colors that have been painted on heavily such as rich dark greens and browns, are very liable to scale in firing, this is due to too hard firing and too rapid cooling.

Never under any circumstances take china from the kiln before it is fully cold, especially pieces that are painted heavily, as even when blood warm and taken out of the kiln, the heavy color is likely to scale, this is because it has not been sufficiently annealed, and there is a strain between the china and the color which causes rupture.

A mistake many make in firing, is by firing for some given length of time some think that a high temperature should be maintained two hours and we have heard of 7 or 8 hours' firing. The correct way to fire ordinary painted china is to let the china get up the temperature at which the colors melt; and when that point is reached, discontinue and allow the kiln to cool down as slowly as possible. It is very wise to turn the gas or oil about one-half off, and then in 15 or 20 minutes turn it down still lower, allowing the fire to be turned out say within one-half an hour from the time the proper melting point was reached, then close up all the peep holes and all inlets, drafts, etc., allowing the kiln to cool very slowly, over night is best.

To maintain a melting temperature for any length of time may spoil the glaze producing matt color, because the fusible colors are rich in alkali and lead, and these substances are easily volatile at a red heat and as long as the colors are melted the soda and lead gradually evaporate, leaving the silica. Matt colors are like other colors except that they contain more silica and not enough soda and lead to make them glaze.



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